



US Army Corps
of Engineers
North Central Division

GREAT LAKES LEVELS UPDATE No. 62 AUGUST 31, 1990

Great Lakes basin precipitation was close to average in August. The following tables show estimated precipitation for August and for the year to date.

Provisional Great Lakes Precipitation (inches)

I. August

Basin	1990*	1900-89 Average	Diff.	% of Ave.
Superior	3.3	3.2	+0.1	103%
Mich-Huron	3.2	3.1	+0.1	103%
Erie	4.1	3.1	+1.0	132%
Ontario	3.4	3.1	+0.3	110%
Great Lakes	3.3	3.1	+0.2	106%

II. Year to Date (January - August)

Basin	1990*	1900-89 Average	Diff.	% of Ave.
Superior	21.0	19.4	+1.6	108%
Mich-Huron	24.3	20.5	+3.8	119%
Erie	29.7	23.2	+6.5	128%
Ontario	27.7	22.7	+5.0	122%
Great Lakes	24.5	20.9	+3.6	117%

* Estimated

During the past 12 months, total precipitation on the Great Lakes basin has been about 2.6 inches (8 percent) above average. Lake Superior has accumulated near-average precipitation. Lakes Michigan-Huron, Erie, and Ontario have had total precipitation about 2.2 inches (7 percent), 6.5 inches (19 percent), and 6.9 inches (20 percent), respectively, above average.

The National Weather Service is forecasting basin-wide precipitation to be below average, with temperatures close to or slightly above average, during September.

The water levels of Lakes Superior and Michigan-Huron continue to be below average for this time of year. Lakes St. Clair and Erie continue above average, while Lake Ontario is continuing slightly below average. Lake Ontario has peaked, while all of the other Great Lakes held steady in August but are expected to begin their seasonal declines in September.

There were several notable actions in August related to Phase II of the Great Lakes Fluctuating Levels Reference Study. The final three members of the 11-member Study Board are now appointed. A draft document outlining the responsibilities of the Working Committees has been developed by the Study Director. The four Working Committees, listed last month, will be preparing detailed Work Plans for Board approval. Working Committees memberships are also being developed.

The Working Committees will work on four major areas as follows: Public Participation and Information; Land Use and Management; Existing Regulation, System-wide Regulation, and Crises Conditions; and, Principles, Measures Evaluation, Integration, and Implementation.

This month's update letter continues the series that began last month on water level fluctuations and how they are modified by the efforts of mankind. Our topic is the Lake Michigan Diversion at Chicago, or, "Lake Michigan Diversion."

Water has been diverted from the Great Lakes basin, through the Lake

Michigan Diversion, with the completion of the Illinois and Michigan Canal in 1848. The water is diverted to the Illinois Waterway and thence to the Mississippi River. This diversion serves several purposes: water supply, wastewater disposal, and navigation, and has the following components:

- a. Water supply taken directly from Lake Michigan for domestic and industrial purposes and then discharged to the Illinois River system as treated wastewater.
- b. Runoff that once drained to Lake Michigan but is now diverted to the Mississippi River basin ("reversal" of the Chicago River).
- c. Water diverted directly from Lake Michigan to the Illinois River and canal system for navigation and dilution purposes.

Until 1900, water diverted from Lake Michigan averaged about 500 cubic feet per second (cfs). The completion of the Chicago Sanitary and Ship Canal in 1900, and the Calumet-Sag Channel in 1922, allowed the diversion of sanitary flow to the Illinois River. This flow had previously gone into Lake Michigan, contaminating the source of Chicago's water supply. In 1910, the volume of water that could be withdrawn was limited to 4,167 cfs by a permit from the United States Secretary of War. This water was for domestic, sanitary, and navigation purposes.

The Lake Michigan Diversion exceeded the permitted amount soon after the Boundary Waters Treaty of 1909 came into effect, touching off a protest note by Britain (on behalf of Canada) in 1913. There also began a lengthy litigation process between Chicago's Sanitary District and the U.S. Government. This litigation was joined by the State of Illinois, three other cities, and several Great Lakes States. The dispute reached the U.S. Supreme Court and was settled by a series of judicial

decrees. In 1925, the Supreme Court decreed that the Diversion be limited to 8,500 cfs; a 1930 decree reduced the Diversion in three steps to 6,500 cfs in 1930, to 5,000 cfs by the end of 1935, and to 1,500 cfs (plus domestic use) by the end of 1938; and, a 1967 decree limited the total amount for all three purposes to 3,200 cfs.

This decree was further modified in 1980 to allow the runoff portion to be averaged over 40 years. In addition, the Corps was given the responsibility to audit the Diversion program and directed to appoint a 3-member committee of experts. These experts reviewed the technical measurement procedures to ensure that state-of-the-art techniques are available. Further, the 1980 decree gave to the Corps the responsibility to audit the State of Illinois' accounting program.

Today, the North Central Division, U.S. Army Corps of Engineers, as of 1 October 1987, is responsible for diversion accounting and certification. This was authorized by the U.S. Congress in the Water Resources Development Act of 1986 and is performed by the Corps' Chicago District. The Illinois Department of Transportation is responsible for allocating the diverted waters. The U.S. Geological Survey conducts flow measurements as needed as part of a joint program with the Corps. The Metropolitan Water Reclamation District of Greater Chicago (formerly the Metropolitan Sanitary District) collects data on the water directly diverted.

About 600-800 cfs of the 3,200 cfs limit is direct diversion through three lakefront control structures. These are the Wilmette Controlling Works, the Chicago River Controlling Works (Chicago Lock, see Figure 1), and O'Brien Lock and Dam. About 1,700-1,900 cfs is pumped from Lake Michigan for potable and industrial use. This water supply pumpage occurs at three intake cribs

located in the lake. The remaining 500-900 cfs is runoff from the Lake Michigan watershed (673 square miles of area) that now goes into the Illinois Waterway system and Mississippi River watershed (see Figure 2).

Finally, as noted below, all three of our Great Lakes Districts have new Commanders.

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FIGURE 1 - CHICAGO LOCK

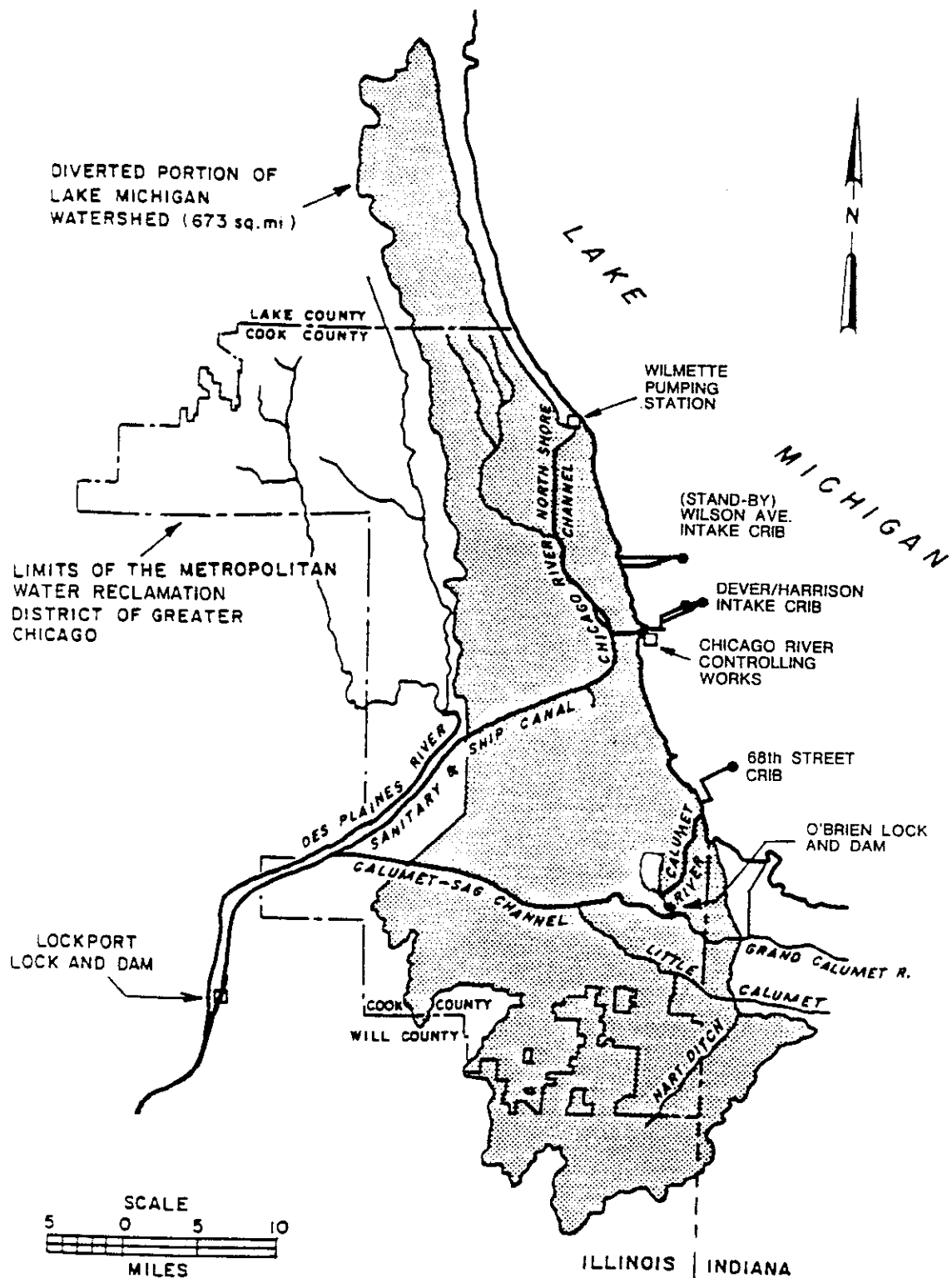


FIGURE 2

LOCATION PLAN-LAKE MICHIGAN DIVERSION AT CHICAGO